

## ABSTRACT OF THE DISCLOSURE

In ion plating in which a substrate is held on a substrate holder placed in an evacuated vacuum chamber and plasma is generated in the vacuum chamber to be formed into a film, a bias voltage composed of a negative bias component having a predetermined negative voltage value for a predetermined output time and a pulse bias component corresponding to a pulse output having a constant positive value for a predetermined time and output with a cycle set in the range of 1kHz – 1GHz is supplied to the inside of the vacuum chamber through the substrate holder by a power supply unit.